

Lanei is a very pretty species and belongs to the *interruptus* group. The fifth ventral abdominal segment is less strongly modified than in other species of the section. The pronotal sculpturing is subject to some variation, being in part very glabrous and in part indented. The maculation is strong, macules intensely black and more or less rounded, rarely coalescing to form two fasciæ as mentioned above. In *salicis* Blais. the macules tend to atrophy. In *foxi* Blais. the modification of the fifth ventral is much stronger, the femora are remarkably swollen and the metafemora markedly arcuate. In the author's synopsis² *lanei* takes its place with *fulvipilosus* Blais. and *cervicalis* Blais. In *fulvipilosus* the antennæ and tarsi are testaceous, and the maculation less strong. *Cervicalis* is more robust and the maculæ tend to unite to form from three to five fasciæ. In *lanei* the elytral apex is more gradually formed and therefore longer and less broadly rounded.

NOTE ON THE HABITS OF LIXUS BLAKEÆ CHITTEN.

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Lagunita, a small lake on the campus of Stanford University, California, is drained during the summer, leaving the lake bed entirely dry. By the 21st of June, 1927, the place, with the exception of a few pools still standing in the deepest portions, had become dry enough to walk about on. At that time a marsh smartweed (*Polygonum muhlenbergii* (Meisn.) S. Wats.) was springing up in numerous patches over the lake bed and beginning to send long vigorous runners over the ground. On a patch of this, uncovered earliest by the water, I found a colony of *Lixus mucidus* Lec. and with it a smaller and more slender species which has been described by Dr. F. H. Chittenden¹ as *Lixus blakeæ*. Both species were observed ovipositing on the Polygonum. Although I did not pay particular attention to the place of oviposition of the two species, I did observe in several instances that females of *Lixus mucidus* oviposited at the base of the long running stems. Later, owing to the extreme hardness of the ground when the earth had become sun-baked,

² Stanford Univ. Publ., n. s., Biological Sciences, Vol. 1, p. 180, June, 1921.

¹ Chittenden, F. H., Proc. Ent. Soc., Wash., Vol. 30, No. 5, May, 1928, p. 90.

no attempt was made to dig up the rootstocks. It may be that *mucidus* breeds in the rootstock. At any rate, out of over 200 larvæ, in no case were adult beetles of that species reared from any part of the plant above ground, although I collected three-quarters of the entire patch of *Polygonum* on which *mucidus* was observed to be most abundant, and reared the larvæ in these stems in a breeding cage separate from the other stems containing larvæ.

The smaller, more slender, species of *Lixus*, which later was reared in great numbers from the stems of the *Polygonum*, laid its eggs inside the stem, the female puncturing it and depositing inside one elongate-oval white egg, approximately 2 mm. long. When a stalk of *Polygonum* was split, these little white eggs could be seen stuck at intervals along the inside of the hollow stem. The larvæ showed a rather unusual method of progression, which I first noticed when I took them out of the stem; that is, they hitched along on their backs in a fashion similar to that of *Cotinis* larvæ. They were also observed to progress in the same manner in split stems of *Polygonum* in the laboratory. Each stem, often 10 or 12 feet long, contained from one to four adult beetles. Frequently larvæ were found in the short lateral shoots also. By the middle of July the sun-baked bed of Lagunita contained many good-sized patches of *Polygonum muhlenbergii*, the *Lixus* larvæ were rapidly approaching pupation, and the prospects of a large adult crop were excellent. Adult beetles began emerging July 20. Unfortunately, at this critical moment, a flock of 250 sheep was turned into the place to "clean it up." I worked hard culling portions of stem containing the nearly mature larvæ or pupæ to secure an adequate collection of the adult beetles. In all, over 200 adults of the new species of *Lixus* emerged in cages from *Polygonum* stems. Not a single specimen of *Lixus mucidus* was among them. This leads me to the belief that *mucidus* has entirely different habits, and possibly breeds in the rootstock. After the pasturage of the sheep, wherever there remained a few *Polygonum* leaves in the lake bed a few adult beetles of the newly emerged generation were to be found feeding on the leaves until August 4. No specimens of newly emerged *mucidus*, however, were found, although a few old rubbed individuals of the early season were collected occa-

sionally until about the first week in August. The old beetles of *mucidus* kept in cages began dying at that time. In captivity the new generation of the smaller species of *Lixus* deposited a few eggs, but this ovipositing ceased by the end of the first week in August. After that date diligent search did not reveal any beetles of either species in the field. The hard earth was full of sun-baked cracks, and the beetles may have gone into hiding there, although none were found. They are strong and ready flyers when thrown into the air.

In the course of the collection of the larvæ and pupæ, numerous nearly mature larvæ were found attacked by small white maggots. The first adult flies from these emerged August 3, and in all over thirty-five specimens, identified by Dr. J. M. Aldrich as *Sarcophaga helici* Tns., were bred from the larvæ. Dr. Aldrich informs me that this maggot usually feeds on dead insects, and that there are only a few authentic records of its parasitism. From the fact that so many individuals were bred out from material collected all over the lake bed, I am inclined to believe that in this case the fly is truly parasitic. Three specimens of a hymenopterous parasite, determined by Mr. R. A. Cushman as *Epiurus pterophori* (Ashm.), were also reared from the nearly mature larvæ.

THE NEARCTIC AND EUROPEAN SPECIES OF THE SUBGENUS PHÆDON (CHRY SOMELINÆ)

BY MELVILLE H. HATCH*

- A¹. Serial punctures of elytra fine, almost lost, hardly stronger than the interstrial ones which are numerous and visible; Ore. to Cal. *prasinella* Lec.
- A². Striæ more coarsely punctate, intervals more finely punctate.
 - B¹. Intervals of elytra subrugulose; clypeal suture impressed at sides, feeble at middle; color shining metallic.
 - C¹. Humeral callus present.
 - D¹. Head and pronotum not alutaceous, micropunctulate.
 - E¹. Humeral callus prominent; elytral intervals micropunctulate; length 3.5 mm.; Cal. to Wash. and Alta *oviformis* Lec.
 - E² Humeral callus weak.
 - F¹. Elytral intervals coarsely punctate; length 3.4 mm.; Wash. *punctatus* sp. nov.

* Contribution from the Zoölogical Laboratory of the University of Washington.